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=> file medline
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 FILE LAST UPDATED: 2 MAR 2003 (20030302/UP). FILE COVERS 1958 TO DATE.

=> d que l100

L92 (     14267)SEA FILE=MEDLINE ABB=ON  PLU=ON  ANTIFUNGAL AGENTS/CT
L93 (      2678)SEA FILE=MEDLINE ABB=ON  PLU=ON  PEST CONTROL, BIOLOGICAL/CT
L94 (       200)SEA FILE=MEDLINE ABB=ON  PLU=ON  RHIZOCTONIA/CT
L95 (      2217)SEA FILE=MEDLINE ABB=ON  PLU=ON  MULTINUCLE### OR MULTI-NUCLE##
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L96 (      1863)SEA FILE=MEDLINE ABB=ON  PLU=ON  BINUCLE###
L97 (      4944)SEA FILE=MEDLINE ABB=ON  PLU=ON  (TWO OR "2")(2W)NUCLE##
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=> d que l107

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=> d que l110

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=> file biosis

FILE 'BIOSIS' ENTERED AT 12:11:38 ON 03 MAR 2003
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FILE COVERS 1969 TO DATE.
CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 26 February 2003 (20030226/ED)

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CT = controlled terminology

2 cites

no cites

no cites for claim 6

2 cites for medline

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L5  (     94809)SEA FILE=BIOSIS ABB=ON  PLU=ON  BIOCONTROL? OR FUNGICID? OR
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L8           32 SEA FILE=BIOSIS ABB=ON  PLU=ON  L6 AND L7
L9           26 SEA FILE=BIOSIS ABB=ON  PLU=ON  L8 NOT (KONINGII OR POINSETTIA
           OR LEAFY(W)SPURGE OR FESCUE OR DOUBLE-CROPPED)/TI
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26 cites

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L10 (      7108)SEA FILE=BIOSIS ABB=ON  PLU=ON  RHIZOCTONI##
L11 (      2969)SEA FILE=BIOSIS ABB=ON  PLU=ON  MULTINUCLE### OR MULTI-NUCLE###

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7 cites

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L17 (      2969)SEA FILE=BIOSIS ABB=ON  PLU=ON  MULTINUCLE### OR MULTI-NUCLE###

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L20 (      3334)SEA FILE=BIOSIS ABB=ON  PLU=ON  INTERNAL TRANSCRIBED SPACER
L21 (         7)SEA FILE=BIOSIS ABB=ON  PLU=ON  L19 AND L20
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no cites

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L115         33 L9 OR L15 OR L23
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33 cites for Biosis

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=> file hcaplus

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FILE COVERS 1907 - 3 Mar 2003  VOL 138 ISS 10
FILE LAST UPDATED: 2 Mar 2003  (20030302/ED)

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MOST RECENT DERWENT UPDATE:     200314        <200314/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

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2 cites for WPIX (Derwent

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removing duplicate citations

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FILE 'MEDLINE' ENTERED AT 12:12:59 ON 03 MAR 2003

FILE 'BIOSIS' ENTERED AT 12:12:59 ON 03 MAR 2003
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FILE 'WPIX' ENTERED AT 12:12:59 ON 03 MAR 2003
COPYRIGHT (C) 2003 THOMSON DERWENT
PROCESSING COMPLETED FOR L114
PROCESSING COMPLETED FOR L115
PROCESSING COMPLETED FOR L116
PROCESSING COMPLETED FOR L91
L117          46 DUP REM L114 L115 L116 L91 (9 DUPLICATES REMOVED)
                 ANSWERS '1-2' FROM FILE MEDLINE
                 ANSWERS '3-34' FROM FILE BIOSIS
                 ANSWERS '35-45' FROM FILE HCAPLUS
                 ANSWER '46' FROM FILE WPIX
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46 cites total

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=> d ibib ab 1-46

L117 ANSWER 1 OF 46  MEDLINE
ACCESSION NUMBER:    2000233109      MEDLINE
DOCUMENT NUMBER:     20233109   PubMed ID: 10772155
TITLE:               Solid formulations of binucleate Rhizoctonia
                     isolates suppress Rhizoctonia solani and Pythium ultimum in
                     potting medium.
AUTHOR:              Harris A R
CORPORATE SOURCE:    CSIRO Division of Soils, and Cooperative Research Centre
                     for Soil and Land Management, Glen Osmond, SA, Australia.
SOURCE:              MICROBIOLOGICAL RESEARCH, (2000 Mar) 154 (4) 333-7.
                     Journal code: 9437794. ISSN: 0944-5013.
PUB. COUNTRY:        GERMANY: Germany, Federal Republic of
DOCUMENT TYPE:       Journal; Article; (JOURNAL ARTICLE)
LANGUAGE:            English
FILE SEGMENT:        Priority Journals
ENTRY MONTH:         200006
ENTRY DATE:          Entered STN: 20000629
                     Last Updated on STN: 20000629
                     Entered Medline: 20000616
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AB Two isolates of **binucleate** Rhizoctonia spp., previously selected for efficacy in suppression of Rhizoctonia solani and Pythium spp., as well as plant growth promotion, were incorporated into various solid substrate formulations. These formulated products were assayed at three doses in three glass-house experiments for biocontrol of damping-off diseases in Capsicum annuum. R. solani anastomosis group 4 or Pythium ultimum var. sporangiiferum were incorporated into pasteurized potting medium with each formulated **binucleate** Rhizoctonia product. All formulations were effective against both pathogens in at least two experiments, but some formulations of one isolate of **binucleate** Rhizoctonia did not give consistent control of R. solani in one experiment. The most consistent formulation, which provided control of both pathogens at all doses of **binucleate** Rhizoctonia, was the simple substrate of rice hulls. The implications for commercialization of a biocontrol product are discussed.

L117 ANSWER 2 OF 46 MEDLINE
ACCESSION NUMBER: 1999451879 MEDLINE
DOCUMENT NUMBER: 99451879 PubMed ID: 10522381
TITLE: Biocontrol of Rhizoctonia solani and Pythium ultimum on Capsicum by Trichoderma koningii in potting medium.
AUTHOR: Harris A R
CORPORATE SOURCE: CSIRO Division of Soils, Glen Osmond, Australia.. adrian.harris@aqis.gov.au
SOURCE: MICROBIOLOGICAL RESEARCH, (1999 Sep) 154 (2) 131-5. Journal code: 9437794. ISSN: 0944-5013.
PUB. COUNTRY: GERMANY: Germany, Federal Republic of
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199910
ENTRY DATE: Entered STN: 20000111
Last Updated on STN: 20000111
Entered Medline: 19991028

AB Two isolates of Trichoderma koningii were evaluated for efficacy in control of damping-off diseases in seedlings of Capsicum annuum grown in pasteurized potting medium in a glasshouse. A selected isolate of **binucleate** Rhizoctonia and two fungicides were also included as standards for control of Rhizoctonia solani and Pythium ultimum var. sporangiiferum. Both isolates of T. koningii reduced seedling death caused by R. solani in one of two experiments, and by P. u. sporangii-ferum in two of three experiments. Neither isolate of T. koningii suppressed damping-off caused by either pathogen as consistently as the **binucleate** Rhizoctonia or fungicides. The implications of these results for commercial disease management are discussed.

L117 ANSWER 3 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.DUPLICATE 1
ACCESSION NUMBER: 2002:116728 BIOSIS
DOCUMENT NUMBER: PREV200200116728
TITLE: Hyphal anastomosis reactions, rDNA-**internal transcribed spacer** sequences, and virulence levels among subsets of **Rhizoctonia** solani anastomosis group-2 (AG-2) and AG-BI.
AUTHOR(S): Carling, D. E. (1); Kuninaga, S.; Brainard, K. A.
CORPORATE SOURCE: (1) University of Alaska-Fairbanks, 533 E. Fireweed, Palmer, AK, 99645: pfdec@uaa.alaska.edu USA
SOURCE: Phytopathology, (January, 2002) Vol. 92, No. 1, pp. 43-50. print.
ISSN: 0031-949X.

DOCUMENT TYPE: Article
LANGUAGE: English
AB Hyphal anastomosis reactions, rDNA-**internal transcribed spacer** (ITS) sequences, and virulence of isolates representing **Rhizoctonia** solani AG-BI and six subsets of anastomosis group (AG)-2 (-2-1, -2-2 IIIB, -2-2 IV, -2-2 LP, -2-3, and -2-4) were compared. AG-2-4 is a subset described for the first time in this report. Anastomosis reactions within AG-BI and the listed subsets of AG-2 were generally strong but, between subsets, ranged from strong to a very weak "bridging"-type reaction. Anastomosis reaction alone generally did not provide adequate evidence for placement of an isolate into a subset of AG-2. Anastomosis reactions between AG-BI and the original subsets of AG-2 (-2-1 and -2-2) are very strong; for this reason, we propose that it be included as a subset of AG-2 (designation AG-2 BI). Subsets -2-3 and -2-4 show very weak bridging-type anastomosis reactions with all other subsets of AG-2 and thus may be candidates for independent AG status. Grouping within AG-2 based on rDNA-ITS sequences was consistent with the abovementioned subsets. However, grouping based on virulence as measured herein does not conform to established grouping patterns within AG-2 and does not seem useful as a group-defining criterion. A broad range of damage was observed among members of the most virulent subsets (-2-1, -2-2 IIIB, -2-2 IV, and -2-4), whereas other subsets (-2 BI, -2-2 LP, and -2-3) were similar to one another in causing a minimal level of damage. Group-specific primer pairs for each of the seven subsets of AG-2 were designed based on the abovementioned rDNA-ITS sequences. Primer pairs proved dependable and subset specific in polymerase chain reaction amplifications of purified genomic DNA from 109 isolates of R. solani and two isolates of **binucleate Rhizoctonia**. These primers will provide a simple and useful method for subset-specific characterization within AG-2 if further critical evaluations confirm their specificity.

L117 ANSWER 4 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.DUPLICATE 2
ACCESSION NUMBER: 2001:543328 BIOSIS
DOCUMENT NUMBER: PREV200100543328
TITLE: Characterization of a new subgroup of **Rhizoctonia** solani anastomosis group 1 (AG-1-ID), causal agent of a necrotic leaf spot on coffee.
AUTHOR(S): Priyatmojo, Achmadi; Escopalao, Verma E.; Tangonan, Naomi G.; Pascual, Cecilia B.; Suga, Haruhisa; Kageyama, Koji; Hyakumachi, Mitsuro (1)
CORPORATE SOURCE: (1) Laboratory of Plant Disease Science, Faculty of Agriculture, Gifu University, Yanagido 1-1, Gifu, 501-1193: hyakumac@cc.gifu-u.ac.jp Japan
SOURCE: Phytopathology, (November, 2001) Vol. 91, No. 11, pp. 1054-1061. print.
ISSN: 0031-949X.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English
AB A new foliar disease on coffee leaves was observed in Mindanao, Philippines, in 1996. The symptoms appeared as large circular or irregularly shaped necrotic areas with small circular necrotic spots (1 mm or less in diameter) usually found around the periphery of the large necrotic areas. **Rhizoctonia** solani was consistently isolated from these diseased coffee leaves. Isolates obtained were **multinucleate** (3 to 12 nuclei per hyphal cell), had an optimum temperature for hyphal growth at 25degreeC, prototrophic for thiamine, and anastomosed with tester isolates belonging to R. solani anastomosis group

1 (AG-1). Mature cultures on potato dextrose agar (PDA) were light to dark brown. Sclerotia, light brown to brown, were formed on the surface of PDA and covered the whole mature colony culture. Individual sclerotia often aggregated into large clumps (3 to 8 mm in diameter) and their color was brown to dark brown. In pathogenicity tests, isolates from coffee caused necrotic symptoms on coffee leaves, whereas isolates of AG-1-IA (not isolated from coffee), 1-IB, and 1-IC did not. The results of analyses of restriction fragment length polymorphism of ribosomal DNA **internal transcribed spacer**, random amplified polymorphism DNA, and fatty acid profiles showed that R. solani isolates from coffee are a population of AG-1 different from AG-1-IA, 1-IB, and 1-IC. These results suggest that R. solani isolates from coffee represent a new subgroup distinct from AG-1-IA, 1-IB, and 1-IC. A new subgroup ID (AG-1-ID) is proposed.

L117 ANSWER 5 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.DUPLICATE 4

ACCESSION NUMBER: 2000:218398 BIOSIS
DOCUMENT NUMBER: PREV200000218398
TITLE: Primers based on specific rDNA-ITS sequences for PCR detection of **Rhizoctonia** solani, R. solani AG 2 subgroups and ecological types, and **binucleate Rhizoctonia.**
AUTHOR(S): Salazar, O.; Julian, M. C.; Rubio, V. (1)
CORPORATE SOURCE: (1) Departamento de Biotecnologia Microbiana, Centro Nacional de Biotecnologia (CNB-CSIC), Universidad Autonoma de Madrid, Campus Cantoblanco, 28049, Madrid Spain
SOURCE: Mycological Research, (March, 2000) Vol. 104, No. 3, pp. 281-285.
ISSN: 0953-7562.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English

AB We have designed primers for identification of the economically important plant pathogenic **Rhizoctonia** solani, for AG 2 and for each subgroup and an ecological type of AG 2. These specific primers have been designed based on specific sequences of the ITS regions in the R. solani species complex. The PCR procedure involves amplification of the 5.8S ribosomal DNA and part of the ITS regions, using the designed primers in combination with the general fungal primers ITS1F and ITS4B. Two of the primers amplify under optimal PCR conditions R. solani AG 1, AG 2, AG 3, AG 4, AG 5 and **binucleate Rhizoctonia** (BNR), and six more primers amplify specifically R. solani AG 2, the subgroups, AG 2-1, AG 2-2 and AG 2-3, and the ecological type AG 2-t. In this study DNAs from R. solani AG 2 and AG 4 growing on infected radish were amplified similarly to DNAs from axenic cultures. PCR detection has time saving advantages over traditional isolation methods for detection of **Rhizoctonia** on infected plant tissue and provides a powerful tool of identification.

L117 ANSWER 6 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.DUPLICATE 5

ACCESSION NUMBER: 2000:173894 BIOSIS
DOCUMENT NUMBER: PREV200000173894
TITLE: Differentiation of **Rhizoctonia** AG-D isolates from turfgrass into subgroups I and II based on rDNA and RAPD analyses.
AUTHOR(S): Toda, Takeshi; Hyakumachi, Mitsuro (1); Suga, Haruhisa; Kageyama, Koji; Tanaka, Akemi; Tani, Toshikazu
CORPORATE SOURCE: (1) Laboratory of Plant Disease Science, Faculty of

Agriculture, Gifu University, 1-1 Yanagido, Gifu, 501-11 Japan
SOURCE: European Journal of Plant Pathology., (Dec., 1999) Vol. 105, No. 9, pp. 835-846.
ISSN: 0929-1873.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English
AB **Binucleate Rhizoctonia** anastomosis group (AG) D is the cause of **rhizoctonia**-patch and elephant-footprint diseases of zoysiagrass, and winter-patch disease of bentgrass. **Rhizoctonia** AG-D is also known as the causal pathogen of other diseases such as sharp-eye-spot of cereals, foot-rot of cereals and winter-stem-rot of mat rush. Isolates of AG-D have been divided into the two subgroups AG-D (I) and AG-D (II), based on the results of cultural characteristics and pathogenicity tests. Isolates obtained from zoysiagrass exhibiting symptoms of **rhizoctonia**-patch disease, from bentgrass with winter-patch disease, from wheat with foot-rot disease, and from mat rush with winter-stem-rot disease were reported to belong to subgroup AG-D (I). On the other hand, isolates obtained from zoysiagrass with elephant-footprint disease were assigned to subgroup AG-D (II). To confirm the existence of these two subgroups in AG-D, the genetic structure of AG-D isolates from turfgrass and other crops was compared. RFLP analysis of the ITS region from rDNA after digestion with the restriction enzymes EcoRI, HaeIII, HhaI, HinfI, and MboI separated AG-D isolates into two groups corresponding to AG-D (I) and AG-D (II). Furthermore, other AGs except AG-Q (AGs-A, Ba, Bb, C, E, F, G, I, K, L, O, P, and R. solani AG1-IC) did not have the same patterns that were seen for the two AG-D subgroups. AG-Q isolates from bentgrass showed the same patterns as AG-D (I). The results of the RAPD analysis also revealed the existence of two groups that corresponded to AG-D (I) and AG-D (II). These analyses revealed that **Rhizoctonia** AG-D isolates from turfgrass could be divided into two subgroups consistent with those based on cultural characteristics and pathogenicity. In addition, isolates of foot-rot disease of wheat and isolates of winter-stem-rot disease of mat rush whose cultural characteristics were the same as those of AG-D (I) also showed similar RFLP and RAPD patterns to those of AG-D (I) isolates from turfgrass.

L117 ANSWER 7 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.DUPLICATE 6
ACCESSION NUMBER: 2000:70887 BIOSIS
DOCUMENT NUMBER: PREV200000070887
TITLE: Common anastomosis and **internal transcribed spacer** RFLP groupings in **binucleate Rhizoctonia** isolates representing root endophytes of Pinus sylvestris, Ceratorhiza spp. from orchid mycorrhizas and a phytopathogenic anastomosis group.
AUTHOR(S): Sen, Robin (1); Hietala, Ari M.; Zelmer, Carla D.
CORPORATE SOURCE: (1) Department of Biosciences, Division of General Microbiology, University of Helsinki, Viikki Biocenter, FIN-00014, Helsinki Finland
SOURCE: New Phytologist, (Nov., 1999) Vol. 144, No. 2, pp. 331-341.
ISSN: 0028-646X.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English
AB **Binucleate Rhizoctonia** endophytes from the roots of nursery-grown Pinus sylvestris (Scots pine) seedlings and the orchid

Goodyera repens from Scots pine forests were characterized on the basis of morphological characters, anastomosis group membership and PCR-assisted ribosomal DNA fingerprinting. Common hyphal and colony morphological traits displayed by the Finnish **binucleate Rhizoctonia** isolates and a range of Canadian orchid root endophytes enabled them to be placed in the anamorphic genus Ceratorhiza. Five main anastomosis groups were identified and included groups that contained different combinations of Scots pine, G. repens and Canadian Ceratorhiza spp. isolates. Two Scots pine root endophytes anastomosed with a phytopathogenic Japanese tester isolate, confirming their membership of anastomosis group I, which is known to include the teleomorphic species Ceratobasidium cornigerum. Hierarchical cluster analysis of RFLPs in the **internal transcribed spacer** of ribosomal DNA enabled the division of isolates into one of five RFLP groups. The RFLP and anastomosis groupings were closely correlated; isolates within each of four RFLP groups, which shared 100% RFLP identity, anastomosed in the cross-pairing anastomosis group tests. However, all represented different vegetatively compatible populations (clones) because the diagnostic killing reaction, a cellular vegetative incompatibility response, was identified at hyphal fusion junctions. These findings indicate a high degree of intraspecific variation within Ceratobasidium cornigerum, which includes isolates able to enter into either mutualistic or pathogenic root association with susceptible host plants. The common anastomosis group/RFLP groupings identified also strongly support the hypothesis that conifer tree roots can act as large inoculum reservoirs for these orchid endophytes, allowing the development of inter-plant connections, via commonly shared hyphal linkages, in boreal forest ecosystems.

L117 ANSWER 8 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.DUPLICATE 7

ACCESSION NUMBER: 2000:56864 BIOSIS
DOCUMENT NUMBER: PREV200000056864
TITLE: Progress towards integrated control of damping-off disease.
AUTHOR(S): Harris, A. R. (1); Nelson, S.
CORPORATE SOURCE: (1) Australian Quarantine and Inspection Service, Canberra, A.C.T. Australia
SOURCE: Microbiological Research, (Sept., 1999) Vol. 154, No. 2, pp. 123-130.
ISSN: 0944-5013.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English

AB Two isolates of **binucleate Rhizoctonia**, previously selected for control of seedling damping-off diseases caused by Pythium spp. and **Rhizoctonia** solani, were tested for their ability to suppress four Phytophthora spp. Hyphal interactions in paired cultures with P. cinnamomi (two isolates), P. citricola and P. cryptogea on 1/4-strength potato dextrose agar were examined microscopically. Both **binucleate Rhizoctonia** isolates prevented growth of all Phytophthora isolates within 36 h of the paired cultures meeting. All fungal isolates produced parallel hyphae, hooks and coils on opposing cultures, except the **binucleate Rhizoctonia** isolates on P. citricola. In four glasshouse experiments, however, neither the **binucleate Rhizoctonia** nor four bicontrol bacterial isolates, consistently suppressed diseases caused by P. cryptogea or P. nicotianae var. nicotianae in tomato seedlings grown in potting medium. Only the **fungicide**, metalaxyl, gave satisfactory disease control against both Phytophthora spp. In a subsequent in vitro test of five **fungicides** at commercial doses, only metalaxyl did not inhibit growth of the two **binucleate Rhizoctonia** isolates.

Because of the compatibility of metalaxyl with the **binucleate Rhizoctonia** isolates, this **fungicide** could be used to control Phytophthora spp. in an integrated control programme with a **binucleate Rhizoctonia** to control the other major damping-off fungi.

L117 ANSWER 9 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.DUPLICATE 8

ACCESSION NUMBER: 1996:225655 BIOSIS
DOCUMENT NUMBER: PREV199698781784
TITLE: Virulence of **Rhizoctonia** oryzae and R. solani AG-8 on wheat and detection of R. oryzae in plant tissue by PCR.
AUTHOR(S): Mazzola, Mark; Wong, Oi Tak; Cook, R. James (1)
CORPORATE SOURCE: (1) USDA Agricultural Res. Service, 365 Johnson Hall, Washington State Univ., Pullman, WA 99164-6430 USA
SOURCE: Phytopathology, (1996) Vol. 86, No. 4, pp. 354-360. ISSN: 0031-949X.
DOCUMENT TYPE: Article
LANGUAGE: English

AB **Rhizoctonia** oryzae and R. solani anastomosis group (AG)-8 both cause root rot of wheat and barley, but R. oryzae has been considered secondary in importance to R. solani AG-8 on these cereals in the U.S. Pacific Northwest. Of 19 isolates of R. oryzae, 12 caused both preemergence damping-off of wheat and a significant reduction in root biomass of 21-day-old seedlings in natural soil at 12 degree C, whereas 7 isolates induced minimal or no damage to wheat under these growth conditions. R. solani AG-8 had no effect on seedling emergence and seminal root development, but four of eight isolates tested caused severe root rot of wheat. Thus, R. oryzae and R. solani AG-8 may cause distinctive and different damage as pathogens of wheat, and their relative importance may vary among field sites and with the developmental stage of the host plant. The nucleotide sequence of the rDNA **internal transcribed spacer** (ITS) regions was divergent between the two species; therefore, the oligonucleotide primers RO1 and RO2 were developed from sequences within ITS1 and ITS2, respectively, that are unique to R. oryzae. These primers amplified a 511-bp fragment from DNA of R. oryzae but not DNA from any intraspecific group of R. solani or from **binucleate Rhizoctonia** spp. A polymerase chain reaction protocol with the RO1 and RO2 primer set was used to detect R. oryzae in wheat roots and is a suitable method to diagnose this fungus.

L117 ANSWER 10 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.DUPLICATE 9

ACCESSION NUMBER: 1990:498795 BIOSIS
DOCUMENT NUMBER: BA90:127141
TITLE: **BIOCONTROL** OF **RHIZOCTONIA** CROWN AND ROOT ROT OF SUGAR BEET BY **BINUCLEATE RHIZOCTONIA**-SPP AND LAETISARIA-ARVALIS.
AUTHOR(S): HERR L J
CORPORATE SOURCE: DEP. PLANT PATHOL., OHIO STATE UNIV., OHIO AGRIC. RES. DEV. CENTER, WOOSTER, OHIO 44691, USA.
SOURCE: ANN APPL BIOL, (1988) 113 (1), 107-118. CODEN: AABIAV. ISSN: 0003-4746.
FILE SEGMENT: BA; OLD
LANGUAGE: English

AB Two isolates of Laetisaria arvalis and 10 of **binucleate Rhizoctonia** spp. (BNR) from the Ohio sugar beet production area, were tested in the greenhouse and field for **biocontrol** of **Rhizoctonia** crown and root rot of sugar beet, caused by

Rhizoctonia solani anastomosis group 2, type 2. L. arvalis was ineffective in standard greenhouse tests, and the single isolates used in the field was generally ineffective. Seven of 10 BNR isolates effectively controlled crown and root rot in greenhouse tests. Delayed application of **biocontrol** agents to plants 5-10 wk old was generally more effective than applications made at planting. A BNR isolate significantly reduced % plant loss and disease ratings and increased yield in a 1985 field test as compared with the control infested with R. solani alone. Two BNR isolates were effective in a 1986 field test and increased yields c. 22% in comparison to a L. arvalis treatment, which did not differ from the R. solani-infested control. The Ohio **binucleate Rhizoctonia** isolates appear to have considerble potential as applied **biocontrol** agents and may play a role in the natural ecology of R. solani in the sugar beet production area of Ohio.

L117 ANSWER 11 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 2002:11173 BIOSIS
DOCUMENT NUMBER: PREV200200011173
TITLE: Formulation of **binucleate Rhizoctonia** spp. and **biocontrol** of **Rhizoctonia** solani on impatiens.
AUTHOR(S): Honeycutt, E. W.; Benson, D. M. (1)
CORPORATE SOURCE: (1) Department of Plant Pathology, North Carolina State University, Raleigh, NC, 27695: mike_benson@ncsu.edu USA
SOURCE: Plant Disease, (December, 2001) Vol. 85, No. 12, pp. 1241-1248. print.
ISSN: 0191-2917.
DOCUMENT TYPE: Article
LANGUAGE: English

AB Isolates BNR621 and P9023 of **binucleate Rhizoctonia** spp. (BNR) in Pesta and rice flour formulations were evaluated for control of preemergence damping-off of impatiens caused by R. solani. Amendment of a soilless potting mix with the formulations at 0.47% (vol:vol) 3 days prior to seeding and infesting did not improve control compared to amendment 1 day prior to seeding and infesting regardless of whether the moistened amended potting mix was stored in closed plastic bags or in plug trays under a mist system. BNR fungi were no more effective in **biocontrol** of R. solani in formulations amended at 0.9%. Control of damping-off was comparable but not consistent between formulations of BNR fungi and the **fungicide** thiophanatemethyl. Damping-off was controlled better with formulations of BNR fungi than with SoilGard based on Trichoderma virens. Shelf life of Pesta and rice flour formulations at 4degreeC was determined by assessing viability of BNR isolates over time. Viability of the BNR isolates, measured as CFU/g of formulation, declined to approximately 68 to 79% of the original propagule concentration after 6 months in Pesta and rice flour formulations, with the greatest decline in the first 2 months. Shelf life of BNR isolates in formulation significantly affected control of preemergence damping-off but was isolate dependent. Preemergence damping-off was only 5 to 7% with fresh formulations but increased to 30 to 50% with 4-month-old formulations. Controlled atmospheres, maintained with saturated salt solutions, were established to measure the effect of water activity on shelf life of formulations. Water activities (aw) of 0.12 and 0.33 aw enhanced BNR survival in formulations by approximately 2 to 3 months compared with aw of 0.53 and 0.75 aw. Storage of Pesta and rice flour formulations at 4degreeC significantly improved BNR survival by 4 to 5 months compared with storage at 25degreeC. These results suggest that improved shelf life of BNR isolates is needed before formulated products can be developed for **biocontrol** of preemergence damping-off.

PFT= preferred & forbidden terms

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L28 (     58246)SEA FILE=HCAPLUS ABB=ON  PLU=ON  FUNGICIDES+PFT/CT
L29 (        40)SEA FILE=HCAPLUS ABB=ON  PLU=ON  L24 AND BINUCLE?
L30 (         2)SEA FILE=HCAPLUS ABB=ON  PLU=ON  L24 AND (TWO OR "2")(2W)NUCLE#
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L31 (      6861)SEA FILE=HCAPLUS ABB=ON  PLU=ON  MULTINUCLE### OR MULTI-NUCLE##
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L32 (         9)SEA FILE=HCAPLUS ABB=ON  PLU=ON  L31 AND L24
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                 (L25 OR L26 OR L27)
L35 (      4194)SEA FILE=HCAPLUS ABB=ON  PLU=ON  (ITS OR ITS1 OR ITS-1)(S)?RIBO
                 SOM?
L36 (      2571)SEA FILE=HCAPLUS ABB=ON  PLU=ON  INTERNAL TRANSCRIBED SPACER
L37 (    191767)SEA FILE=HCAPLUS ABB=ON  PLU=ON  GENETIC ELEMENT+PFT/CT
L38 (        47)SEA FILE=HCAPLUS ABB=ON  PLU=ON  L24 AND L37
L39 (        33)SEA FILE=HCAPLUS ABB=ON  PLU=ON  L24 AND L36
L40 (       893)SEA FILE=HCAPLUS ABB=ON  PLU=ON  L35 AND L36
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1 cite

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NT= narrower terms

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                 SOM?
L49 (      2571)SEA FILE=HCAPLUS ABB=ON  PLU=ON  INTERNAL TRANSCRIBED SPACER
L50 (    191767)SEA FILE=HCAPLUS ABB=ON  PLU=ON  GENETIC ELEMENT+PFT/CT
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L53 (       893)SEA FILE=HCAPLUS ABB=ON  PLU=ON  L48 AND L49
L54           7 SEA FILE=HCAPLUS ABB=ON  PLU=ON  ((L44 OR L45) OR L47) AND
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7 cites

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=> d que 161
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=> d que 170
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L65 (      3781)SEA FILE=HCAPLUS ABB=ON  PLU=ON  EMBRYOPHYTA/CT
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                OR HERB OR BEAN OR POTATO OR SUGAR BEET OR CARROT OR GARLIC OR
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5 cites

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L84 (         0)SEA FILE=HCAPLUS ABB=ON  PLU=ON  L79 AND (ATCC 64643 OR
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L85           0 SEA FILE=HCAPLUS ABB=ON  PLU=ON  (L80 OR L81 OR L82 OR L83 OR
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no cites for claim 6

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L116         18 L42 OR L54 OR L61 OR L70 OR L78 OR L85
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18 cites for HCAPLUS

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FILE 'WPIX' ENTERED AT 12:11:46 ON 03 MAR 2003
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L117 ANSWER 12 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 2001:181345 BIOSIS
DOCUMENT NUMBER: PREV200100181345
TITLE: **Biological control** of black scurf on potato under organic management.
AUTHOR(S): Tsror, L. (1); Barak, R.; Sneh, B.
CORPORATE SOURCE: (1) Department of Plant Pathology, Gilat Experiment Station, Agricultural Research Organization, Ministry of Agriculture, MP Negev, 85280: tsror@bgumail.bgu.ac.il Israel
SOURCE: Crop Protection, (March, 2001) Vol. 20, No. 2, pp. 145-150. print.
ISSN: 0261-2194.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English
AB Field experiments showed that Trichoderma harzianum, nonpathogenic **Rhizoctonia** (np-R) and cattle manure compost amendment (CMC-H) applied in furrow could reduce black scurf incidence in organically grown potatoes. Incorporation of T. harzianum applied to the soil surface had a relatively small effect compared to the in-furrow treatment. Application of two isolates of nonpathogenic-**binucleate Rhizoctonia** (RS 521 and RU 56-8-AG-P) also significantly reduced the incidence of infected tubers in field experiments. Although treatments significantly reduced disease incidence and severity, total yield was unaffected. For the first time the efficiency of T. harzianum and np-R in reducing the incidence of black scurf on daughter tubers was demonstrated using naturally infested soil and contaminated seed tubers.

L117 ANSWER 13 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 2000:272623 BIOSIS
DOCUMENT NUMBER: PREV200000272623
TITLE: **Biocontrol** of damping-off of Catharanthus roseus caused by Pythium ultimum with Trichoderma virens and **binucleate Rhizoctonia** fungi.
AUTHOR(S): Burns, J. R.; Benson, D. M. (1)
CORPORATE SOURCE: (1) Department of Plant Pathology, North Carolina State University, Raleigh, NC, 27695 USA
SOURCE: Plant Disease, (June, 2000) Vol. 84, No. 6, pp. 644-648. print.
ISSN: 0191-2917.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English
AB Four isolates of Trichoderma (Gliocladium) virens (G-45, G-65, G-85, and G-93) and two isolates of **binucleate Rhizoctonia** spp. (BNR621 and P9023) were evaluated for **biocontrol** of preemergence damping-off of Catharanthus roseus (vinca) caused by Pythium ultimum. Putative **biocontrol** agents were amended to a soilless mix 1, 3, or 6 days prior to seeding and pathogen infestation to determine if colonization of the mix before infestation was important for **biocontrol** efficacy. **Biocontrol** of preemergence damping-off of vinca with the four isolates of T. virens was variable. Only isolate G-93 gave control of preemergence damping-off (10 to 18% disease) regardless of the length of time the mix was amended prior to seeding and infestation compared to the infested control (43% disease). In contrast, preemergence damping-off was 10 to 15% with SoilGard (based on isolate GL-21 of T. virens). For isolate G-65, preemergence damping-off of vinca was 0% in lots of mix amended 1 day prior to seeding, but over 60% in lots of mix amended 6 days prior to seeding, compared to 43% in the

infested control. With the exception of isolate G-65 in the lot amended 6 days before seeding, the isolates of T. virens were as effective as metalaxyl (19% damping-off) for control of P. ultimum in lots of mix amended 1 to 6 days before seeding. In contrast to T. virens, **biocontrol** efficacy of isolates BNR621 and P9023 of **binucleate Rhizoctonia** spp. in a Pesta formulation improved as lots of mix were amended up to 6 days before seeding and infestation. As length of initial amendment increased from 1 to 6 days, preemergence damping-off decreased from 37 to 16% for BNR621, and from 42 to 22% for P9023. Preemergence damping-off was observed in vinca in control treatments with only the putative **biocontrol** agents (BNR621, 14% disease and P9023, 19.6%); therefore, additional bedding plant species were evaluated for susceptibility to the BNR isolates. In the absence of P. ultimum, isolates BNR621 and P9023 in a Pesta formulation caused an average 82.5, 56.5, and 5.8% damping-off of snapdragon, petunia, and impatiens, respectively. Our results suggest that **binucleate Rhizoctonia** isolates, although effective for **biocontrol** of P. ultimum on vinca, should be evaluated for pathogenicity on a crop by crop basis before use on other crops.

L117 ANSWER 14 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1999:441974 BIOSIS
DOCUMENT NUMBER: PREV199900441974
TITLE: Cell wall alterations in hypocotyls of bean seedlings protected from **Rhizoctonia** stem canker by a **binucleate Rhizoctonia** isolate.
AUTHOR(S): Jabaji-Hare, Suha (1); Chamberland, Helene; Charest, Pierre M.
CORPORATE SOURCE: (1) Department of Plant Science, McGill University, MacDonald Campus, Ste-Anne-de-Bellevue, Quebec, H9X 3V9 Canada
SOURCE: Mycological Research, (Aug., 1999) Vol. 103, No. 8, pp. 1035-1043.
ISSN: 0953-7562.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English
AB The influence exerted by the non-pathogenic **binucleate Rhizoctonia** (np-BNR) isolate 232-CG in stimulating plant defence reactions in young bean plants inoculated with the root rot fungus **Rhizoctonia** solani (AG-4) was examined using light and electron microscopy and further investigated by gold cytochemistry. Severe necrotic lesions on hypocotyles of diseased beans were observed, and the pathogen invaded the cortical tissue causing extensive damage including cell disorganization and cell wall degradation. In contrast, these host reactions were not seen in bean plants inoculated with the non-pathogenic BNR or in plants that were inoculated with BNR and subsequently challenge-inoculated with R. solani. Microscopic examination of hypocotyls inoculated with the non-pathogenic BNR, showed a different host reaction typical of plant defence reactions. In these samples, epidermal and outer cortical cells were impregnated with an electron-dense material. Histochemical assays of this material confirmed the substantial presence of phenols, pectic substances and suberin. Electron microscope observations clearly showed that in non-pathogenic BNR-inoculated plants, fungal cells were confined to the epidermal layer which was darkly stained. Gold cytochemistry confirmed the presence of pectic substances in the electron dense material. The possibility that pectic oligogalacturonides released after hydrolysis by the non-pathogenic BNR enzymes may act as elicitors of defence responses is discussed. The present ultrastructural observations corroborate that non-pathogenic BNR

isolates may function as potential inducers of plant disease resistance.

L117 ANSWER 15 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 2000:21565 BIOSIS
DOCUMENT NUMBER: PREV200000021565
TITLE: **Biological control** of **Rhizoctonia** diseases: 2. Use of non-pathogenic isolates of **Rhizoctonia** in **biological control**.
AUTHOR(S): Sneh, Baruch (1)
CORPORATE SOURCE: (1) George S. Wise Faculty of Life Sciences, Department of Botany, Tel Aviv University, Institute for Nature Conservation Research, Ramat Aviv, 69978 Israel
SOURCE: Summa Phytopathologica, (April June, 1999) Vol. 25, No. 2, pp. 102-106.
ISSN: 0100-5405.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English; Portuguese
AB Non pathogenic (avirulent or hypovirulent) isolates of the same species of plant pathogenic fungi are expected to have characteristics similar to those of virulent ones, regarding their ability to occupy the same ecological niches. As they lack the ability to infect the host, a certain proportion of them may therefore be considered to have the potential to compete successfully against the respective pathogens on the host infection sites and thus, protect the plants from the disease caused by the virulent isolates. Examples of disease severity reduction or suppression by nonpathogenic or hypovirulent isolates, have been reported for a considerable number of fungal plant pathogens, including Fusarium oxysporum, Cryphonectria parasitica, Ceratocystis ulmi, Allternaria sp., Pythium spp., Septoria tritici, Penicillium funiculosum and **Rhizoctonia** spp. Thus, certain non pathogenic isolates are considered and/or used as **biocontrol** agents. Non pathogenic isolates of **Rhizoctonia** (n p-R) possessing the capability to protect seedlings against damping-off caused by virulent isolates of **Rhizoctonia** spp of different AG's. were found among different anastomosis groups of **binucleate-** as well as **multinucleate Rhizoctonia** spp. Np-R isolates may differ in their capability to protect plants, as well as in the mechanisms involved in protection. Relatively few reports are concerned to the np-R mode of action. Some reports have indicated that dsRNA is involved in the protection by certain np-R, but these were degenerate isolates of short survival, and will probably protect only against pathogens of the same AG. Some np-R isolates induced plant resistance against R. solani, Pythium aphanidermatum and Pseudomonas syringae pv. lachrymans in cucumber seedlings, while others which do protect the seedlings against damping off did not. Some reports speculated that the np-R compete for nutrients, but did not support it with significant data. In a detailed study to determine t he mode of action of np-R. solani isolate (AG 4) Rs-521, no indication for the involvement of antibiosis, hyperparasitism, lysis, competition for nutrients or induced resistance (phytoalexins), could have been confirmed. Use of selective antibiotics or surface disinfection with sodium hypochlorite to kill the hyphae of the colonizing np-R, did not reverse the protection. The only way which could nullify the protection was obtained by physical removal of the hyphae from the seedling's surface. It was found that this np-R isolate intensively colonized the root and crown surface and competed with the pathogenic isolate for infection sites.

L117 ANSWER 16 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1998:486047 BIOSIS

DOCUMENT NUMBER: PREV199800486047
TITLE: Association of **binucleate Rhizoctonia** with soybean and mechanism of **biocontrol** of **Rhizoctonia** solani.
AUTHOR(S): Poromarto, Susilo H.; Nelson, Berlin D. (1); Freeman, Thomas P.
CORPORATE SOURCE: (1) Dep. Plant Pathol., N.D. State Univ., Fargo, ND 58105 USA
SOURCE: Phytopathology, (Oct., 1998) Vol. 88, No. 10, pp. 1056-1067.
ISSN: 0031-949X.
DOCUMENT TYPE: Article
LANGUAGE: English

AB The association of **binucleate Rhizoctonia** (BNR) AG-K with soybean and the interaction of BNR, R. solani AG-4, and soybean seedlings were investigated to elucidate the mechanism of **biocontrol** of R. solani by BNR. Sixty-hour-old seedlings were inoculated and incubated in a growth chamber at 24degreeC; plants were examined with light microscopy and with scanning and transmission electron microscopy at various times following inoculation. BNR grew over hypocotyls, roots, and root hairs, but only colonized epidermal cells. Hyphae of BNR appeared to attach to the epidermis and, 5.5 h following inoculation, began penetrating cells by means of penetration pegs without forming distinct appressoria or infection cushions. There was evidence of cuticle degradation at the point of penetration. Infection hyphae moved to adjacent epidermal cells by direct penetration of epidermal radial walls. There were epidermal and cortical cell necrosis, beginning with the fragmentation of the tonoplast and followed by the disintegration of cytoplasm, organelles, and plasma membranes. Cell necrosis was also observed in adjacent cells where there was no evidence of BNR hyphae. Cell walls were not destroyed. After 144 h, there was no evidence of BNR hyphae in cortical cells. Attempted penetrations were observed, but papillae formed on the inside of cortical cell walls. Preinoculation of soybean seedlings with BNR 24 or 48 h before inoculation with R. solani (1 cm between inocula) affected the growth of R. solani on soybean tissue. There were fewer hyphae of R. solani, the hyphae branched sparingly, and infection cushions were rare when compared with hyphal growth on soybean inoculated only with R. solani. These effects were observed before the BNR hyphae began to intermingle with the hyphae of R. solani on the surface of the inoculated host. Preinoculation of soybean seedlings 24 h before inoculation with R. solani significantly ($P = 0.05$) reduced disease incidence and severity caused by R. solani AG-4. The lesions caused by R. solani always appeared distally, not proximally, to the BNR inoculum. The interactions of intermingling hyphae of BNR and R. solani were examined in vitro and on the surface of the host. There was no evidence of lysis, mycoparasitism, inhibition of growth, or any other form of antagonism between hyphae. The results of these studies strongly suggest that induced resistance is the mechanism of **biocontrol** of R. solani on soybean by BNR. The inhibition of hyphal growth of R. solani on the surface of soybean tissue preinoculated with BNR appears to be a novel characteristic of induced resistance.

L117 ANSWER 17 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1998:309292 BIOSIS
DOCUMENT NUMBER: PREV199800309292
TITLE: **Biological control** of wirestem on cabbage using **binucleate Rhizoctonia** spp.
AUTHOR(S): Ross, R. E.; Keinath, A. P.; Cubeta, M. A. (1)
CORPORATE SOURCE: (1) N.C. State Univ., Vernon G. James Res. Extension Cent.,

Plymouth, NC 27962 USA
SOURCE: Crop Protection, (March, 1998) Vol. 17, No. 2, pp. 99-104. ISSN: 0261-2194.
DOCUMENT TYPE: Article
LANGUAGE: English
AB **Binucleate Rhizoctonia** (BNR) was investigated for **biological control** of wirestem on cabbage, caused by **Rhizoctonia** solani anastomosis group (AG) 4. Cabbage seedlings colonized with BNR isolate B901 (AG-G), 232-CG (AG-G), or PDS26E (AG unknown) were transplanted into infested field plots. In the fall of 1994 and 1995, BNR isolate B901 reduced wirestem incidence and area under the disease progress curve (AUDPC) compared with the non-treated control, although not to the level of the **fungicide** standard, pentachloronitrobenzene (PCNB). In the spring of 1995, all three BNR isolates and PCNB significantly reduced wirestem incidence and AUDPC compared with the non-treated control. Overall disease incidence was low in this season. Marketable weights in some treatments with PDS26E were greater than the non-treated control or PCNB. In the spring of 1996, although no treatments reduced wirestem, PCNB and 232-CG had the highest yields. BNR appears to have the potential to control wirestem on cabbage when low soil temperatures after planting or low precipitation during the growing season limit disease development.

L117 ANSWER 18 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1997:301138 BIOSIS
DOCUMENT NUMBER: PREV199799600341
TITLE: Identification and pathogenicity of **Rhizoctonia** spp. isolated from apple roots and orchard soils.
AUTHOR(S): Mazzola, Mark
CORPORATE SOURCE: USDA Agricultural Res. Serv., Tree Fruit Res. Lab., 1104 N. Western Ave., Wenatchee, WA 98801 USA
SOURCE: Phytopathology, (1997) Vol. 87, No. 6, pp. 582-587. ISSN: 0031-949X.
DOCUMENT TYPE: Article
LANGUAGE: English
AB **Rhizoctonia** spp. were isolated from the roots of apple trees and associated soil collected in orchards located near Moxee, Quincy, East Wenatchee, and Wenatchee, WA. The anastomosis groups (AGs) of **Rhizoctonia** spp. isolated from apple were determined by hyphal anastomosis with tester strains on 2% water agar and, where warranted, sequence analysis of the rDNA **internal transcribed spacer** region and restriction analysis of an amplified fragment from the 28S ribosomal RNA gene were used to corroborate these identifications. The dominant AG of R. solani isolated from the Moxee and East Wenatchee orchards were AG 5 and AG 6, respectively. **Binucleate Rhizoctonia** spp. were recovered from apple roots at three of four orchards surveyed and included isolates of AG-A, -G, -I, -J, and -Q. In artificial inoculations, isolates of R. solani AG 5 and AG 6 caused extensive root rot and death of 2- to 20-week-old apple transplants, providing evidence that isolates of R. solani AG 6 can be highly virulent and do not merely exist as saprophytes. The effect of **binucleate Rhizoctonia** spp. on growth of apple seedlings was isolate dependent and ranged from growth enhancement to severe root rot. R. solani AG 5 and AG 6 were isolated from stunted trees, but not healthy trees, in an orchard near Moxee, WA, that exhibited severe symptoms of apple replant disease, suggesting that R. solani may have a role in this disease complex.

L117 ANSWER 19 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1997:329087 BIOSIS

DOCUMENT NUMBER: PREV199799628290
TITLE: A pesta formulation of **binucleate** **Rhizoctonia** spp. for **biocontrol** of **Rhizoctonia** crown rot of impatiens.
AUTHOR(S): Benson, D. M.
CORPORATE SOURCE: Dep. Plant Pathol., N.C. State Univ., Raleigh, NC 27695-7629 USA
SOURCE: Phytopathology, (1997) Vol. 87, No. 6 SUPPL., pp. S8. Meeting Info.: Annual Meeting of the American Phytopathological Society Rochester, New York, USA August 9-13, 1997
ISSN: 0031-949X.
DOCUMENT TYPE: Conference; Abstract
LANGUAGE: English

L117 ANSWER 20 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1996:233098 BIOSIS
DOCUMENT NUMBER: PREV199698797227
TITLE: **Biocontrol** of **Rhizoctonia** damping-off of cucumber by non-pathogenic **binucleate** **Rhizoctonia**.
AUTHOR(S): Villajuan-Abgona, Remedios; Kageyama, Koji; Hyakumachi, Mitsuro (1)
CORPORATE SOURCE: (1) Lab. Plant Dis. Sci., United Grad. Sch. Agric. Sci., Gifu Univ., 1-1 Yanagido, Gifu 501-11 Japan
SOURCE: European Journal of Plant Pathology, (1996) Vol. 102, No. 3, pp. 227-235.
ISSN: 0929-1873.
DOCUMENT TYPE: Article
LANGUAGE: English
AB Three isolates of **binucleate** **Rhizoctonia** (BNR) were tested for **biological control** of damping-off of cucumber seedlings caused by **Rhizoctonia** solani AG 2-2 and AG 4. BNR isolates L2 (AG Ba) and W1 and W7 (AG A) provided protection of 58 to 71% against virulent isolate C4 of AG 4 and 64 to 75% protection against virulent isolate RH 65 of AG 2-2. Varying protection was provided to the seedlings by the BNR isolates against the virulent R. solani from the two AGs depending on their combination. The BNR isolates did not vary in providing protection to the seedling when tested against virulent C4 when both isolates were inoculated using three different methods, viz. in water agar, combination of water agar and soil and using soil alone. Protection of 58 to 71% was provided by the isolates when inoculation was done on the hypocotyl using water agar, 62.8 to 75% using the combination of water agar and soil, and 75 to 85% when inoculation of both isolates was done in soil. Pre-incubation of BNR W7 or delayed inoculation of C4 (from 0.5 day to longer duration) using the different methods provided an increased protection to the seedlings to give complete inhibition of damping-off disease. Simultaneous inoculation of both BNR W7 and C4 using the three methods failed to provide protection to the seedlings. Among the BNR isolates, BNR W7 showed plant growth promotion in terms of significant increase in plant height ($P = 0.01$) and fresh weight ($P = 0.05$).

L117 ANSWER 21 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1996:14361 BIOSIS
DOCUMENT NUMBER: PREV199698586496
TITLE: **Biocontrol** of Phytophthora with **binucleate** **Rhizoctonia** fungi.
AUTHOR(S): Cartwright, D. Kelly; Spurr, H. W., Jr.
CORPORATE SOURCE: Dep. Plant Pathol., North Carolina State Univ., Raleigh, NC USA

SOURCE: Phytopathology, (1995) Vol. 85, No. 10, pp. 1136.
Meeting Info.: Annual Meeting of the American Phytopathological Association Pittsburgh, Pennsylvania, USA August 12-16, 1995
ISSN: 0031-949X.
DOCUMENT TYPE: Conference
LANGUAGE: English

L117 ANSWER 22 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1995:351405 BIOSIS
DOCUMENT NUMBER: PREV199598365705
TITLE: **Biological control** of **Rhizoctonia** solani by **binucleate Rhizoctonia** spp. and hypovirulent R. solani agents.
AUTHOR(S): Herr, Leonard J.
CORPORATE SOURCE: Dep. Plant Pathol., Ohio State Univ., Ohio Agric. Res. Development Cent., Wooster, OH 44691 USA
SOURCE: Crop Protection, (1995) Vol. 14, No. 3, pp. 179-186.
ISSN: 0261-2194.
DOCUMENT TYPE: General Review
LANGUAGE: English
AB Despite research on **biological control** dating back to the early 1930s, reliable, economical **biocontrols** of diseases caused by **Rhizoctonia** solani are not generally available commercially. New approaches for detection and use of novel agents and development of broadly applicable **biological control** management systems are needed, especially for field crops. During the past 10 years, new sources of agents from within the diverse groups of **binucleate Rhizoctonia** spp. and hypovirulent R. solani isolates have been demonstrated to be effective in **biocontrol** of a range of host - R. solani disease combinations. Although these agents include isolates from several different **binucleate Rhizoctonia** anastomosis groups (AG) and hypovirulent R. solani AG, neither mycoparasitism nor antibiosis is involved in **biocontrol** of R. solani by any of these isolates. Postulated mechanisms of **biocontrol** include induction of systemic host resistance, and/or competition for recognition and invasion sites or nutrients. Tested collections of **binucleate Rhizoctonia** spp. and hypovirulent R. solani differ markedly in effectiveness as **biocontrol** agents for diseases caused by R. solani. Reportedly, plant surface-colonizing isolates (i.e. on or superficially within outer tissues of roots, crowns, hypocotyls, stems or petioles) are effective **biocontrol** agents, whereas, non-colonizers are ineffective.

L117 ANSWER 23 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1995:53739 BIOSIS
DOCUMENT NUMBER: PREV199598068039
TITLE: **Biological control** of **rhizoctonia** incited diseases of table beets with **binucleate rhizoctonia** isolates.
AUTHOR(S): Olaya, G.; Abawi, G. S.
CORPORATE SOURCE: Dep. Plant Pathol., Cornell Univ., Geneva, NY 14456 USA
SOURCE: Phytopathology, (1994) Vol. 84, No. 10, pp. 1091.
Meeting Info.: Annual Meeting of the American Phytopathological Society Albuquerque, New Mexico, USA August 6-10, 1994
ISSN: 0031-949X.
DOCUMENT TYPE: Conference
LANGUAGE: English

L117 ANSWER 24 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1992:43536 BIOSIS
DOCUMENT NUMBER: BR42:19686
TITLE: **BIOLOGICAL CONTROL** OF **RHIZOCTONIA**-SOLANI ANASTOMOSIS GROUP 4 AG 4 USING **BINUCLEATE RHIZOCTONIA** SPP. AND HYPOVIRULENT ISOLATES OF AG 4.
AUTHOR(S): WASHINGTON J R; MARTIN F N
CORPORATE SOURCE: PLANT PATHOL. DEP., UNIV. FLA., GAINESVILLE, FLA. 32611.
SOURCE: ANNUAL MEETING OF THE AMERICAN PHYTOPATHOLOGICAL SOCIETY, ST. LOUIS, MISSOURI, USA, AUGUST 17-21, 1991. PHYTOPATHOLOGY, (1991) 81 (10), 1228. CODEN: PHYTAJ. ISSN: 0031-949X.
DOCUMENT TYPE: Conference
FILE SEGMENT: BR; OLD
LANGUAGE: English

L117 ANSWER 25 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1992:43315 BIOSIS
DOCUMENT NUMBER: BR42:19465
TITLE: **BIOLOGICAL CONTROL** OF **RHIZOCTONIA**-SOLANI ON SOYBEAN WITH **BINUCLEATE RHIZOCTONIA.**
AUTHOR(S): KHAN F U; NELSON B; HELMS T
CORPORATE SOURCE: DEP. PLANT PATHOL., N.D. STATE UNIV., FARGO, N.D. 58105.
SOURCE: ANNUAL MEETING OF THE AMERICAN PHYTOPATHOLOGICAL SOCIETY, ST. LOUIS, MISSOURI, USA, AUGUST 17-21, 1991. PHYTOPATHOLOGY, (1991) 81 (10), 1198. CODEN: PHYTAJ. ISSN: 0031-949X.
DOCUMENT TYPE: Conference
FILE SEGMENT: BR; OLD
LANGUAGE: English

L117 ANSWER 26 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1991:361268 BIOSIS
DOCUMENT NUMBER: BA92:49493
TITLE: RELATIONSHIP OF **BINUCLEATE RHIZOCTONIA** ISOLATES USED FOR **BIOCONTROL** OF **RHIZOCTONIA** CROWN ROT OF SUGAR BEET TO ANASTOMOSIS SYSTEMS.
AUTHOR(S): HERR L J
CORPORATE SOURCE: DEP. PLANT PATHOLOGY, OHIO STATE UNIV., OHIO AGRICULTRUAL RES. DEVELOPMENT CENT., WOOSTER, OHIO 44791, USA.
SOURCE: CAN J MICROBIOL, (1991) 37 (5), 339-344. CODEN: CJMIAZ. ISSN: 0008-4166.
FILE SEGMENT: BA; OLD
LANGUAGE: English
AB The relationships of 10 **binucleate Rhizoctonia** isolates used as **biocontrol** agents of **rhizoctonia** crown and root rot of sugar beet in Ohio to described **binucleate Rhizoctonia** anastomosis systems were investigated. Ten Ohio **binucleate Rhizoctonia** (Ohio BNR) isolates, paired in all combinations, cross anastomosed with one another, indicating that all belong to the same anastomosis group. Four representative Ohio BNR isolates failed to anastomose with any tester isolates of the Ceratobasidium anastomosis grouping system, indicating that none belong in that system. However, all 10 Ohio BNR isolates anastomosed with an AG-B (o) tester isolate (**binucleate Rhizoctonia** anastomosis grouping system), indicating that the Ohio agents belong in this anastomosis grouping system and to the (o) intraspecific group of AG-B.

None of the Ohio BNR isolates anastomosed with either of the other two intraspecific group tester isolates (AG-Ba, AG-Bb) of the AG-B group. Moreover, the AG-B intraspecific group tester isolates, AG-Ba, AG-Bb, AG-B (o), self-anastomosed but did not cross anastomose with one another. Variations in cultural characteristics noted among the 10 Ohio BNR isolates indicated that considerable heterogeneity exists within these AG-B (o) isolates.

L117 ANSWER 27 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1991:42214 BIOSIS
DOCUMENT NUMBER: BR40:19194
TITLE: ANASTOMOSIS GROUPING OF **BINUCLEATE RHIZOCTONIA** AGENTS USED FOR **BIOCONTROL** OF **RHIZOCTONIA** ROOT ROT OF SUGAR BEET.
AUTHOR(S): HERR L J
CORPORATE SOURCE: DEP. PLANT PATHOL., OHIO STATE UNIV., WOOSTER, OHIO 44691.
SOURCE: 1990 ANNUAL MEETING OF THE AMERICAN PHYTOPATHOLOGICAL SOCIETY AND THE CANADIAN PHYTOPATHOLOGICAL SOCIETY, GRAND RAPIDS, MICHIGAN, USA, AUGUST 4-8, 1990. PHYTOPATHOLOGY, (1990) 80 (10), 963.
CODEN: PHYTAJ. ISSN: 0031-949X.
DOCUMENT TYPE: Conference
FILE SEGMENT: BR; OLD
LANGUAGE: English

L117 ANSWER 28 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1990:462302 BIOSIS
DOCUMENT NUMBER: BR39:97663
TITLE: EVALUATION OF **BINUCLEATE RHIZOCTONIA** -LIKE FUNGI FOR **BIOLOGICAL CONTROL** OF SORE SHIN CAUSED BY **RHIZOCTONIA**-SOLANI ON TOBACCO NICOTIANA-TABACUM L.
AUTHOR(S): WALKER S K; JOHNSON C S; STROMBERG E L
CORPORATE SOURCE: DEP. PLANT PATHOL. PHYSIOL. AND WEED SCI., VPI AND SU, BLACKSBURG, VA. 24061.
SOURCE: ANNUAL MEETING OF THE POTOMAC DIVISION OF THE AMERICAN PHYTOPATHOLOGICAL SOCIETY, MARCH 21-23, 1990. PHYTOPATHOLOGY, (1990) 80 (7), 673.
CODEN: PHYTAJ. ISSN: 0031-949X.
DOCUMENT TYPE: Conference
FILE SEGMENT: BR; OLD
LANGUAGE: English

L117 ANSWER 29 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1990:123436 BIOSIS
DOCUMENT NUMBER: BR38:57646
TITLE: EFFICACY OF **BINUCLEATE RHIZOCTONIA** AGENTS BN IN **BIOCONTROL** OF **RHIZOCTONIA** ROOT ROT OF SUGAR BEET IN THE FIELD.
AUTHOR(S): HERR L J
CORPORATE SOURCE: DEP. PLANT PATHOL., OHIO STATE UNIV., WOOSTER, OHIO 44691.
SOURCE: ANNUAL MEETING OF THE AMERICAN PHYTOPATHOLOGICAL SOCIETY, RICHMOND, VIRGINIA, USA, AUGUST 20-24, 1989. PHYTOPATHOLOGY, (1989) 79 (10), 1160.
CODEN: PHYTAJ. ISSN: 0031-949X.
DOCUMENT TYPE: Conference
FILE SEGMENT: BR; OLD
LANGUAGE: English

L117 ANSWER 30 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.

ACCESSION NUMBER: 1989:152368 BIOSIS
DOCUMENT NUMBER: BR36:74409
TITLE: MECHANISMS OF **BIOCONTROL** OF **RHIZOCTONIA** ROOT ROT OF SUGAR BEET BY **BIOCONTROL** AGENTS **BINUCLEATE RHIZOCTONIA**-SPP BNR AND LAETISARIA-ARVALIS.
AUTHOR(S): HERR L J
CORPORATE SOURCE: DEP. PLANT PATHOLOGY, THE OHIO STATE UNIV., OARDC, WOOSTER, OHIO 44691.
SOURCE: 1988 ANNUAL MEETING OF THE AMERICAN PHYTOPATHOLOGICAL SOCIETY (NORTH CENTRAL DIVISION), WEST LAFAYETTE, INDIANA, USA, JUNE 22-23, 1988. PHYTOPATHOLOGY, (1988) 78 (11), 1502.
CODEN: PHYTAJ. ISSN: 0031-949X.
DOCUMENT TYPE: Conference
FILE SEGMENT: BR; OLD
LANGUAGE: English

L117 ANSWER 31 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1988:215273 BIOSIS
DOCUMENT NUMBER: BR34:108283
TITLE: **BINUCLEATE RHIZOCTONIA**-SPP AND LAETISARIA-ARVALIS **BIOCONTROL** AGENTS FOR **RHIZOCTONIA** CROWN ROT OF SUGAR BEET.
AUTHOR(S): HERR L J
CORPORATE SOURCE: DEP. PLANT PATHOL., OSU/OARDC, WOOSTER, OHIO 44691.
SOURCE: ANNUAL MEETING OF THE AMERICAN PHYTOPATHOLOGICAL SOCIETY AND OF THE NORTH CENTRAL DIVISION, CINCINNATI, OHIO, USA, AUGUST 2-6, 1987. PHYTOPATHOLOGY, (1987) 77 (12), 1688.
CODEN: PHYTAJ. ISSN: 0031-949X.
DOCUMENT TYPE: Conference
FILE SEGMENT: BR; OLD
LANGUAGE: English

L117 ANSWER 32 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1988:137535 BIOSIS
DOCUMENT NUMBER: BA85:72362
TITLE: NATURE OF PROTECTION OF BEAN SEEDLINGS FROM **RHIZOCTONIA** ROOT ROT BY A **BINUCLEATE RHIZOCTONIA** LIKE FUNGUS.
AUTHOR(S): CARDOSO J E; ECHANDI E
CORPORATE SOURCE: DEP. PLANT PATHOL., NORTH CAROLINA STATE UNIV., RALEIGH 27695.
SOURCE: PHYTOPATHOLOGY, (1987) 77 (11), 1548-1551.
CODEN: PHYTAJ. ISSN: 0031-949X.
FILE SEGMENT: BA; OLD
LANGUAGE: English
AB Protection of bean [Phaseolus vulgaris] seedlings from **Rhizoctonia** root rot by a **binucleate Rhizoctonia**-like fungus (BNR) was investigated in laboratory and greenhouse studies. BRN failed to show antagonistic interaction when grown in dual culture on agar media with **Rhizoctonia** solani; also, filtrates from 10-day-old cultures of BNR did not inhibit R. solani. Histologic sections of hypocotyls and roots of BNR-treated seedlings showed that BRN did not penetrate beyond the epidermal cells, but it extensively colonized the rhizosphere and rhizoplane of bean seedlings. Root exudates from 10-day-old BNR-treated seedlings inhibited hyphal growth and sclerotial germination of R. solani in vitro. Treatment of bean seedlings with BNR before inoculation with R. solani inhibited formation of infection cushions by R. solani. Surface sterilization with either 1% sodium hypochlorite or 70% ethanol for 30 sec

completely eradicated BRN from bean roots and hypocotyls. When seedlings were replanted and subsequently inoculated with the pathogen, however, the protective capability against R. solani was maintained. These results suggest that the main mechanism of protection in this system involves a BNR-induced metabolic response by bean seedlings that suppresses R. solani at the infection site.

L117 ANSWER 33 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1987:192838 BIOSIS
DOCUMENT NUMBER: BA83:100962
TITLE: **BIOLOGICAL CONTROL** OF **RHIZOCTONIA** ROOT ROT OF SNAP BEAN WITH **BINUCLEATE RHIZOCTONIA**-LIKE FUNGI.
AUTHOR(S): CARDOSO J E; ECHANDI E
CORPORATE SOURCE: DEPARTMENT OF PLANT PATHOLOGY, NORTH CAROLINA STATE UNIVERSITY, RALEIGH 27695.
SOURCE: PLANT DIS, (1987) 71 (2), 167-170.
CODEN: PLDIDE. ISSN: 0191-2917.
FILE SEGMENT: BA; OLD
LANGUAGE: English
AB Eleven isolates of **binucleate Rhizoctonia**-like fungi (BNR) and one isolate each of R. zeae, Trichoderma hamatum, and T. harzianum were studied as potential **biocontrol** agents of root rot of snap bean [Phaseolus vulgaris] caused by R. solani in the greenhouse and field. Isolates of BNR reduced (P = 0.05) disease incidence and disease severity in four greenhouse experiments. Four selected isolates of BNR and the two isolates of Trichoderma species were then screened in soils naturally infested with R. solani. Four field experiments were conducted at two locations. Selected isolates of BNR significantly (P = 0.05) protected bean seedlings from **Rhizoctonia** root rot in one or more experiments. One BNR isolate (BN-160) significantly (P = 0.05) protected snap beans from **Rhizoctonia** root rot in all field experiments. Isolate TC-1 of T. harzianum protected bean seedlings in only one field experiment. Results indicate that isolates of BNR show potential as **biocontrol** agents of **Rhizoctonia** root rot of snap bean.

L117 ANSWER 34 OF 46 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1987:100875 BIOSIS
DOCUMENT NUMBER: BR32:50676
TITLE: **BIOCONTROL** OF **RHIZOCTONIA** CROWN ROT OF SUGAR BEETS BY **BINUCLEATE RHIZOCTONIA** -SPP AND LAETISARIA-ARVALIS.
AUTHOR(S): HERR L J
CORPORATE SOURCE: DEP. PLANT PATHOL., THE OHIO STATE UNIV., OARDC, WOOSTER, OH 44691.
SOURCE: 1986 ANNUAL MEETING OF THE AMERICAN PHYTOPATHOLOGICAL SOCIETY AND OF THE CARIBBEAN AND SOUTHERN DIVISIONS, KISSIMMEE, FLORIDA, USA, AUGUST 10-14, 1986. PHYTOPATHOLOGY, (1986) 76 (10), 1103-1104.
CODEN: PHYTAJ. ISSN: 0031-949X.
DOCUMENT TYPE: Conference
FILE SEGMENT: BR; OLD
LANGUAGE: English

L117 ANSWER 35 OF 46 HCAPLUS COPYRIGHT 2003 ACS DUPLICATE 3
ACCESSION NUMBER: 2000:84552 HCAPLUS
DOCUMENT NUMBER: 132:133605
TITLE: Selection of plant-protective strains of **binucleate** Rhizoctonia using molecular markers

INVENTOR(S): Rubio Susan, Victor; Salazar Torres, Oscar; Julian Esquivias, Maria; Gonzales Garcia, Vicente; Gomez-acebo Gullon, Eduardo; Munoz Gomez, Ramona; Lopez Corcoles, Horacio
PATENT ASSIGNEE(S): Instituto Tecnico Agronomico Provincial, S.A., Spain; Salazar Torres, Oscar; Julian Esquivias, Maria; Gonzales Garcia, Vicente; Gomez-Acebo Gullon, Eduardo; Munoz Gomez, Ramona; Lopez Corcoles, Horacio
SOURCE: PCT Int. Appl., 121 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000004779	A1	20000203	WO 1999-GB2406	19990723
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9950573	A1	20000214	AU 1999-50573	19990723
EP 1102539	A1	20010530	EP 1999-934956	19990723
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				

PRIORITY APPLN. INFO.: GB 1998-16265 A 19980724
WO 1999-GB2406 W 19990723

AB Methods of selecting strains of **binucleate** Rhizoctonia that can be used in protection of plants against pathogenic fungi is achieved by the detection of certain **ITS ribosomal** sequences, the protective strains suitably being members of a phylogenetically differentiated cluster. A new group of **binucleate** Rhizoctonia is identified for such use. Identification of protective strains and characterization of their protective properties are demonstrated. Successful protection of a no. of crop plants, including grass, tomato, carrot, alfalfa, wheat, rape and pine seedlings against pathogenic Rhizoctonia is demonstrated.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L117 ANSWER 36 OF 46 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2000:261169 HCAPLUS
DOCUMENT NUMBER: 133:1722
TITLE: Combination of pencycuron and Pseudomonas fluorescens strain 2-79 for integrated control of Rhizoctonia root rot and take-all of spring **wheat**
AUTHOR(S): Duffy, B.
CORPORATE SOURCE: Phytopathology group, Institute for Plant Sciences, Swiss Federal Institute of Technology, Zurich, CH-8092, Switz.
SOURCE: Crop Protection (2000), 19(1), 21-25
CODEN: CRPTD6; ISSN: 0261-2194
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal

LANGUAGE: English

AB Pencycuron (Monceren) was evaluated for in vitro growth inhibition of **wheat** pathogenic Rhizoctonia spp., Gaeumannomyces graminis var. tritici and Pythium spp., and for control of **wheat** root diseases in greenhouse trials. In the greenhouse, pencycuron inhibited **binucleate** Rhizoctonia, R. oryzae, or R. solani in vitro and reduced Rhizoctonia root rot. Pencycuron also inhibited G. graminis var. tritici strains in vitro and slightly reduced take-all disease in the greenhouse. Pencycuron seed treatment protected plants against a disease mixt. of Rhizoctonia root rot and take-all. Pythium spp. were not inhibited by pencycuron in vitro. Pencycuron did not adversely affect seedling emergence, nor did it inhibit rhizosphere colonization by Pseudomonas fluorescens biocontrol strain 2-79. Combined application of the fungicide and strain 2-79 to seed was more effective than either treatment alone for controlling disease.

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L117 ANSWER 37 OF 46 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1997:222581 HCAPLUS
DOCUMENT NUMBER: 126:208478
TITLE: Chemical control of **binucleate** Rhizoctonia during propagation of Calluna vulgaris in Scotland
AUTHOR(S): Litterick, A.M.; Mcquilken, M.P.
CORPORATE SOURCE: Plant Science Department, The Scottish Agricultural College, Ayr, KA6 5HW, UK
SOURCE: Crop Protection (1997), 16(2), 173-178
CODEN: CRPTD6; ISSN: 0261-2194
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Isolates of **binucleate** Rhizoctonia were found to be moderately sensitive to the fungicides tolclofos-Me, iprodione, quintozene, benomyl and captan in vitro, (i.e. the concns. required to give 50% linear growth inhibition were between 1 and 10 .mu.g mL-1). Propagation medium incorporations of tolclofos-Me, iprodione and captan were evaluated in the glasshouse for efficacy in controlling disease caused by **binucleate** Rhizoctonia on cuttings of Calluna vulgaris. Tolclofos-Me and captan gave good control with no phytotoxicity damage when used at 40 and 66 .mu.g mL-1 medium, resp. Iprodione gave only partial disease control when used at 40 .mu.g mL-1 medium. Further glasshouse expts. that compared different application rates of tolclofos-Me and captan showed that a redn. in rates from the above resulted in reduced disease control. Increased rates resulted in slight phytotoxicity damage. The efficacy of both tolclofos-Me and captan were reduced when they were mixed into propagation medium 2-3 wk before use. The susceptibility of cultivars to infection and their sensitivity to fungicides differed slightly between expts. The importance of these findings for the integrated control of **binucleate** Rhizoctonia on ericaceous plant nurseries is discussed.

L117 ANSWER 38 OF 46 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1997:29550 HCAPLUS
DOCUMENT NUMBER: 126:57194
TITLE: Selectivity of fungicides within the genus Rhizoctonia
AUTHOR(S): Kataria, Hans R.; Gisi, U.
CORPORATE SOURCE: Institute for Integrated Plant Protection, Gurgaon, 122001, India
SOURCE: Modern Fungicides and Antifungal Compounds, International Symposium, 11th, Friedrichroda, Germany,

May 14-20, 1995 (1996), Meeting Date 1995, 421-429.
Editor(s): Lyr, Horst; Russell, Philip E.; Sisler, Hugh D. Intercept: Andover, UK.
CODEN: 63RYAG
DOCUMENT TYPE: Conference; General Review
LANGUAGE: English
AB A review with 18 refs. Reactions of different Rhizoctonia species and anastomosis groups (AGs) belonging to teleomorphic genera Thanatephorus, Ceratobasidium, and Waitea to a variety of fungicides from diverse chem. groups are described. Variability and selectivity of antifungal activity are highlighted, and wherever possible mechanisms of selectivity are deducted from the reported mode of action. Cyproconazole, hexaconazole and tolclofos-Me strongly inhibit all Rhizoctonia species and AGs, whereas imidazole (prochloraz, imazalil) and pyrimidine (fenarimol) fungicides are largely ineffective. Carboxamide (carboxin, benodanil, flutolanil, pyracarbolid, furmecyclox), benzimidazole (thiabendazole, carbendazim, benomyl, thiophanatemethyl), dicarboximide (iprodione), triazole (propiconazole, flusilazole, tebuconazole, flutriafol, triadimefon, triadimenol) and morpholine (fenpropimorph) fungicides show wide variations in activity against these fungi. The phenylurea fungicide pencycuron exhibits highest level of selectivity, with strong activity against only some AGs of R. solani, while the other **multinucleate** and **binucleate** species of Rhizoctonia are insensitive.

L117 ANSWER 39 OF 46 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1995:267777 HCAPLUS
DOCUMENT NUMBER: 122:48984
TITLE: Response of Rhizoctonia solani and **binucleate** Rhizoctonia to five fungicides and control of pocket rot of table beets with foliar sprays
AUTHOR(S): Olaya, Gilberto; Abawi, George S.; Barnard, John
CORPORATE SOURCE: Department of Plant Pathology, Cornell University, Geneva, NY, 14456, USA
SOURCE: Plant Disease (1994), 78(11), 1033-7
CODEN: PLDIDE; ISSN: 0191-2917
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The response of 107 isolates of Rhizoctonia solani AG 2-1, 2-2, 4, and 5, and **binucleate** Rhizoctonia collected from roots, petioles, and leaf tissues of table beets, as well as directly from hymenia of Thanatephorus cucumeris, were tested in vitro for sensitivity against five fungicides (benomyl, iprodione, pencycuron, tolclofos-Me, and fludioxonil [CGA-173506]) each at four different concns. The growth of the isolates was inhibited by fludioxonil and tolclofos-Me at 1 .mu.g/mL and iprodione at 10 .mu.g/mL, but the isolates varied considerably in sensitivity to pencycuron and benomyl even at 100 .mu.g/mL. Benomyl, iprodione, tolclofos-Me, and fludioxonil were evaluated for control of disease under field conditions. Table beets were inoculated with soil infested with three highly virulent isolates of R. solani. In 1991, one spray of each of these fungicides at a rate of 2.2 kg formulated product per ha was applied before or after inoculation with R. solani. The expt. was repeated in 1992, except that a second spray was applied 2 wk after the first spray. In both years, all fungicide applications significantly reduced the no. of infected roots. In 1991, fludioxonil applied before the inoculation of R. solani reduced the incidence of infected roots from 21.8 to 3.8% and was the most effective treatment. In 1992, one spray before inoculation or two sprays (one before inoculation and the second 2 wk later) of fludioxonil reduced the incidence of infected roots from 14.6 to 1.2 and 0.7%, resp. Fungicide applications made before inoculation with R. solani were more effective than those made after inoculation (1

day later). In the field, fungicides should be applied before the first cultivation, at which time a considerable amt. of R. solani infested soil is thrown on the beet plants.

L117 ANSWER 40 OF 46 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1992:647060 HCAPLUS
DOCUMENT NUMBER: 117:247060
TITLE: Chemical and biological control of Rhizoctonia solani AG-4 in snap **bean** double-cropped with corn
AUTHOR(S): Sumner, Donald R.; Lewis, Jack A.; Gitaitis, Ronald D.
CORPORATE SOURCE: Dep. Plant Pathol., Univ. Georgia, Tifton, GA, 31793-0748, USA
SOURCE: Crop Protection (1992), 11(2), 121-6
CODEN: CRPTD6; ISSN: 0261-2194
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Fungicides applied to soil or used as seed treatments and biocontrol agents were tested for 3 yr in field expts. for efficacy against Rhizoctonia solani AG-4 in snap **bean** double-cropped with corn. In field plots infested artificially with R. solani AG-4, PCNB was as effective as flutolanil in increasing yield of green pods; however, flutolanil was more effective in reducing population densities of R. solani AG-4 in soil and on roots and in reducing hypocotyl disease. Tolclofos-Me and mepronil were similar to PCNB in efficacy. The effects of the biocontrol agents Gliocladium virens, Trichoderma hamatum, a **binucleate** Rhizoctonia CAG-2, and Pseudomonas cepacia were inconsistent, but all showed significant efficacy against R. solani AG-4 in one of the years. However, G. virens, T. hamatum, and CAG-2 all reduced yield in one or more years in artificially or naturally infested soil. Laetisaria arvalis did not control R. solani AG-4.

L117 ANSWER 41 OF 46 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1991:116796 HCAPLUS
DOCUMENT NUMBER: 114:116796
TITLE: In vitro sensitivity of Rhizoctonia solani and other **multinucleate** and **binucleate** Rhizoctonia to selected fungicides
AUTHOR(S): Carling, D. E.; Helm, D. J.; Leiner, R. H.
CORPORATE SOURCE: Agric. For. Exp. Stn., Univ. Alaska, Fairbanks, AK, 99645, USA
SOURCE: Plant Disease (1990), 74(11), 860-3
CODEN: PLDIDE; ISSN: 0191-2917
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Isolates of R. solani, R. zeae, R. oryzae, and **binucleate** Rhizoctonia, including representatives of 11 anastomosis groups of R. solani, were exposed to a range of concns. (0, 0.01, 0.10, 1.00, or 10.00 mg/L) of 5 fungicides (benomyl, hexaconazole, iprodione, PCNB, and prochloraz) in vitro. EC50 values were detd. for each fungus-fungicide combination. All isolates were highly sensitive to hexaconazole (EC50 values <1 mg/L), and most isolates were moderately sensitive (EC50 values between 1 and 10 mg/L) to the other 4 fungicides. The EC50 values for R. zeae, R. oryzae, and similar isolates frequently were much lower or much higher than those for isolates of R. solani or **binucleate** Rhizoctonia, but they did not follow a consistent pattern. EC50 values based on radial growth were as much as 10 times greater than EC50 values based on dry wt.

L117 ANSWER 42 OF 46 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1988:402349 HCAPLUS

DOCUMENT NUMBER: 109:2349
TITLE: Sensitivity of **binucleate** Rhizoctonia spp. and R. solani to selected fungicides in vitro and on azalea under greenhouse conditions
AUTHOR(S): Frisina, T. A.; Benson, D. M.
CORPORATE SOURCE: North Carolina State Univ., Raleigh, NC, 27695, USA
SOURCE: Plant Disease (1988), 72(4), 303-6
CODEN: PLDIDE; ISSN: 0191-2917
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Benomyl, benodanil, chlorothalonil, and iprodione were evaluated in vitro for inhibition of linear growth of **binucleate** Rhizoctonia (BN2 and BN8) from Rhododendron with web blight and R. solani (RS15) from Ilex crenata Helleri with leaf blight. Isolates of **binucleate** Rhizoctonia and R. solani were sensitive (ED50 <1.1 .mu.g/mL) to all fungicides tested in vitro. Dosage-response curves were similar for isolates of **binucleate** Rhizoctonia and R. solani grown on **potato**-dextrose agar (PDA) amended with benodanil and iprodione. Dosage-response curves were steeper, on a log-probit basis, for R. solani grown on PDA amended with benomyl or chlorothalonil than for **binucleate** Rhizoctonia. Levels of inhibition of 14 selected isolates of **binucleate** Rhizoctonia and 4 isolates of R. solani were normally distributed at ED50 concn. of the fungicides. Benomyl, benodanil, and iprodione were evaluated under greenhouse conditions for efficacy of control of web blight (suppression of aerial mycelium) on azaleas inoculated with virulent isolates of **binucleate** Rhizoctonia (BN2) and R. solani (RS25). Both **binucleate** Rhizoctonia and R. solani responsed similarly to fungicide treatments; the drenches of iprodione and the sprays of benomyl, benodanil, and iprodione effectively limited aerial mycelial growth.

L117 ANSWER 43 OF 46 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1987:434971 HCAPLUS
DOCUMENT NUMBER: 107:34971
TITLE: A qualitative baiting technique for selective isolation of Rhizoctonia zeae from soil
AUTHOR(S): Windham, A. S.; Lucas, L. T.
CORPORATE SOURCE: Dep. Plant Pathol., North Carolina State Univ., Raleigh, NC, 27695-7616, USA
SOURCE: Phytopathology (1987), 77(5), 712-14
CODEN: PHYTAJ; ISSN: 0031-949X
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A baiting technique was developed for selective isolation of R. zeae from naturally infested soil using fungicide-treated stem segments of cotton and a selective medium consisting of 2% water agar and benomyl, metalaxyl, penicillin G, and streptomycin sulfate at 10, 10, 50, and 50 .mu.g/mL, resp. Cotton stem segments soaked in benomyl at 500 .mu.g/mL and metalaxyl at 100 .mu.g/mL or in benomyl at 1000 .mu.g/mL were successfully used to isolate R. zeae from two naturally infested soils. Fungicide-treated stems were colonized in significantly higher nos. by R. zeae than untreated stems. The selective medium also increased recovery of R. zeae from colonized stems. Untreated stems were colonized by R. solani, **binucleate** Rhizoctonia-like fungi, Pythium spp., and a no. of other common soil-inhabiting fungi.

L117 ANSWER 44 OF 46 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1984:505682 HCAPLUS
DOCUMENT NUMBER: 101:105682
TITLE: Response of Rhizoctonia blights of tall fescue to

selected fungicides in the greenhouse
AUTHOR(S): Martin, S. Bruce; Campbell, C. Lee; Lucas, Leon T.
CORPORATE SOURCE: Dep. Plant Pathol., North Carolina State Univ., Raleigh, 27695, USA
SOURCE: Phytopathology (1984), 74(7), 782-5
CODEN: PHYTAJ; ISSN: 0031-949X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Benomyl [17804-35-2], carboxin [5234-68-4], PCNB [82-68-8], iprodione [36734-19-7], chlorothalonil [1897-45-6], and triadimefon [43121-43-3] were sprayed on tall fescue (Festuca arundinacea) plants in greenhouse expts. to det. their effect on foliar blight in plants inoculated with isolates of Rhizoctonia solani, **binucleate** Rhizoctonia-like fungi, and R. zeae after fungicide treatment. Benomyl treatments did not prevent increase of disease caused by **binucleate** Rhizoctonia-like fungi in one expt., and on some benomyl-treated plants, disease was more severe than on unsprayed, inoculated plants. Isolates of R. zeae caused as much or more blight on benomyl-treated plants than on untreated plants inoculated with R. zeae. PCNB was ineffective against R. zeae and one of the R. solani isolates tested. Carboxin, triadimefon, iprodione, and chlorothalonil were effective in preventing infection by all Rhizoctonia species and Rhizoctonia-like fungi. Thus, all Rhizoctonia species induced disease in tall fescue and the effectiveness of fungicide treatments in reducing disease varied among the Rhizoctonia-fungicide combinations.

L117 ANSWER 45 OF 46 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1984:505681 HCAPLUS
DOCUMENT NUMBER: 101:105681
TITLE: Comparative sensitivity of Rhizoctonia solani and Rhizoctonia-like fungi to selected fungicides in vitro
AUTHOR(S): Martin, S. Bruce; Lucas, Leon T.; Campbell, C. Lee
CORPORATE SOURCE: Dep. Plant Pathol., North Carolina State Univ., Raleigh, NC, 27650, USA
SOURCE: Phytopathology (1984), 74(7), 778-81
CODEN: PHYTAJ; ISSN: 0031-949X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Benomyl [17804-35-2], carboxin [5234-68-4], PCNB [82-68-8], iprodione [36734-19-7], chlorothalonil [1897-45-6], and triadimefon [43121-43-3] were added to **potato**-dextrose agar at 0, 1, 10, and 100 mg/L. The in vitro growth response (inhibition of linear growth) of 16 isolates of R. solani, **binucleate** Rhizoctonia-like fungi, and R. zeae from several sources were tested on fungicide-amended media. R. solani And **binucleate** Rhizoctonia-like fungi were sensitive to benomyl, i.e., EC50 (effective concn. for 50% inhibition of linear growth) <10 mg/L), whereas isolates of R. zeae were tolerant to benomyl (EC50 >50 mg/L) but sensitive to the other fungicides. Fungi were most sensitive to iprodione (EC50 generally <1 mg/L), but growth inhibition in response to other fungicides (esp. PCNB) differed considerably. Anastomosis group tester isolates of R. solani were variable in response to carboxin, PCNB, chlorothalonil, and triadimefon.

L117 ANSWER 46 OF 46 WPIX (C) 2003 THOMSON DERWENT
ACCESSION NUMBER: 1999-550409 [46] WPIX
DOC. NO. CPI: C1999-160440
TITLE: Biologically pure culture of Pseudomonas putida useful for inhibiting replant disease.
DERWENT CLASS: C05 D16
INVENTOR(S): MAZZOLA, M

PATENT ASSIGNEE(S): (USDA) US SEC OF AGRIC
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 5948671	A	19990907	(199946)*		7

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 5948671	A	US 1998-122342	19980724

PRIORITY APPLN. INFO: US 1998-122342 19980724
AB US 5948671 A UPAB: 19991110
NOVELTY - Biologically pure culture of Pseudomonas putida designated NRRL B-30041 (I), is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) a composition for controlling replant disease comprising (I) and an agriculturally acceptable carrier;

(2) a method of inhibiting replant disease comprising applying (I) to the roots or root zone of a tree of the Rosaceae; and

(3) a method of inhibiting replant disease comprising applying (I) by root-dip methods, soil drench methods, and/or application to the soil on a soil-based carrier.

ACTIVITY - Anti-replant disease; Anti-fungal.

MECHANISM OF ACTION - None given.

USE - (I) is useful for inhibiting replant disease and a broad group of fungi including **Rhizoctonia** sp. and Phythium sp.. (I) exhibits activity against ascomycetes, basidiomycetes, zygomycetes, and oomycetes, and specifically against fungi of the genera Alternaria, Cylindrocarpon, Fusarium, Mortierella, Mucor, Phytophthora, Pythium, Ulocladium, and **Rhizoctonia**, and especially **Rhizoctonia** solani AG's 5 and 6, and **binucleate Rhizoctonia** sp. belonging to AG's G, Q and I.
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